CLAIMS

We claim:

1. A method comprising

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells.

2. A method according to claim 1 further comprising:

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-6 to form a proliferated population of mucosal mast cells.

3. A method according to claim 1 further comprising:

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-4 to form a proliferated population of connective tissue-type mast cells.

4. A method according to claim 1 further comprising:

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-3 to form a proliferated population of basophil cells.

5. A method according to claim 1 wherein said at least one CD34-positive cell is a human CD34-positive cell.

6. A method according to claim 1 wherein said at least one CD34-positive cell is obtained from umbilical cord blood.

7. A method according to claim 2 wherein said IL-6 is a human IL-6.

8. A method according to claim 3 wherein said IL-4 is a human IL-4.

9. A method according to claim 4 wherein said IL-3 is a human IL-3.

10. A method according to claim 1 wherein said flt-3 ligand is human flt-3 ligand.

11. A method according to claim 1, 2, 3 or 4 wherein said stem cell factor is human stem cell factor.

12. A method comprising

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells; and

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-6 to form a proliferated population of mucosal mast cells.

13. A method comprising

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells; and

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-4 to form a proliferated population of connective tissue-type mast cells.

14. A method comprising

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells; and

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-3 to form a proliferated population of basophil cells.

15. A method of screening a proliferated population of mucosal mast cells comprising:

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells;

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-6 to form a proliferated population of mucosal mast cells;

c) screening said proliferated population of mucosal mast cells with at least one candidate bioactive agent; and

d) evaluating said proliferated population of mucosal mast cells for a mast cell with an altered phenotype.

16. A method of screening a proliferated population of connective tissue-type mast cells comprising:

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells;

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-4 to form a proliferated population of connective tissue-type mast cells;

c) screening said proliferated population of connective tissue-type mast cells with at least one candidate bioactive agent; and

d) evaluating said proliferated population of connective tissue-type mast cells for a mast cell with an altered phenotype.

17. A method of screening a proliferated population of basophil cells comprising:

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells;

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-3 to form a proliferated population of basophil cells;

c) screening said proliferated population of basophil cells with at least one candidate bioactive agent; and

d) evaluating said proliferated population of basophil cells for a basophil cell with an altered phenotype.

18. A method according to claim 15 wherein a library of candidate bioactive agents is added to said proliferated population of mucosal mast cells.

19. A method according to claim 16 wherein a library of candidate bioactive agents is added to said proliferated population of connective tissue-type mast cells.

20. A method according to claim 17 wherein a library of candidate bioactive agents is added to said proliferated population of basophil cells.

21. A method according to claim 15, 16, or 17 wherein said candidate bioactive agent is a small molecule candidate bioactive agent.

22. A method according to claim 15, 16, or 17 wherein said candidate bioactive agent is a peptide and said screening is done by introducing a nucleic acid encoding said peptide to said mast cells.

23. A method according to claim 22 wherein said peptide is a random peptide.

24. A method according to claim 22 wherein said peptide is derived from cDNA.

25. A method according to claim 22 wherein said peptide is derived from gDNA.

26. A method according to claim 22 wherein said peptide is derived from mRNA.

27. A method according to claim 1, 15, 16, or 17 wherein said proliferated population of CD34-negative cells contains at least 10^7 cells.

28. A method according to claim 1, 15, 16, or 17 wherein said proliferated population of CD34-negative cells contains at least 10^8 cells.

29. A method according to claim 1, 15, 16, or 17 wherein said proliferated population of CD34-negative cells contains at least 10^9 cells.

30. A method according to claim 1, 15, 16, or 17 wherein said proliferated population of CD34-negative cells contains at least 10^{10} cells.

31. A method according to claim 1, 15, 16, or 17 wherein said proliferated population of CD34-negative cells contains at least 10^{11} cells.

32. A method according to claim 15, 16, or 17 wherein said altered phenotype is decreased degranulation of at least one cell of said proliferated population of mast cells.

33. A method according to claim 15, 16, or 17 , further comprising isolating a candidate bioactive agent that causes said altered phenotype.

34. A proliferated population of mucosal mast cells, wherein said proliferated population of mucosal mast cells is prepared by a method comprising:

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells; and

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-6 to form a proliferated population of mucosal mast cells.

35. A proliferated population of connective tissue-type mast cells, wherein said proliferated population of connective tissue-type mast cells is prepared by a method comprising:

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells; and

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-4 to form a proliferated population of connective tissue-type mast cells.

36. A proliferated population of basophil cells, wherein said proliferated population of basophil cells is prepared by a method comprising:

a) contacting at least one CD34-positive cell with a flt-3 ligand and a stem cell factor to generate a proliferated population of CD34-negative progenitor cells; and

b) contacting said proliferated population of CD34-negative progenitor cells with said stem cell factor and an IL-3 to form a proliferated population of basophil cells.